PENINGKATAN EFISIENSI SISTEM INSTALASI PENGOLAHAN AIR LIMBAH (IPAL) DI INDUSTRI PENGOLAHAN GAMBIR KOTA PAYAKUMBUH

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Abstract

The gambier industry in West Sumatra, particularly in Payakumbuh, is the largest in Indonesia, accounting for 80-90% of the country's total production. This high output leads to significant waste production. This article examines the potential environmental pollution from gambier industry wastewater and the measures taken to address this issue. The study highlights the effective use of coagulation-flocculation and adsorption methods in treating textile industry wastewater. It reviews the conditions of the Wastewater Treatment Plant (WWTP) in the gambier processing industry before optimization and the steps taken to enhance its performance. Additionally, it analyzes the characteristics of the wastewater before and after treatment. The findings indicate that adding aerators and pH-adjusting agents to the WWTP improves wastewater treatment performance, ensuring the effluent meets government quality standards. Furthermore, using Poly Aluminium Chloride (PAC) in treatment significantly reduces COD and BOD, demonstrating the degradation of organic components in gambier waste. COD removal efficiency is 92.65%, and BOD removal efficiency is 58.01%. These optimizations improve the quality of the gambier industry's wastewater, minimizing its environmental impact and ensuring compliance with Indonesian environmental regulations.

Kata Kunci	:	Wastewater; WWTP; Gambier; Chemical Oxygen Demand; Biological Oxygen Demand